

KL-620

Microcomputer Sensing Control Equipment



* Notebook is excluded.

The KL-620 Microcomputer Sensing Control equipment is a comprehensive sensor/transducer control training system. Its modular and closed-loop control circuits allow implementation of open-ended, individual control loops used in industrial applications.

The KL-620 uses only industrial-standard sensors / transducers (0~10V, 4~20mA) with USB interface.

► Features

- Industrial-standard sensors and transducers
- With USB interface
- Open-ended design, ideal for expansion
- Offer a sensing data acquisition software

► Specification

► Main Unit (KL-61001B)

1. Power Supply Unit

Fixed DC power supply

- (1) Output voltage : +5V, -5V, +12V, -12V
- (2) Max. output current : +5V/3A, -5V/0.3A, +12V/1.5A, -12V/0.3A
- (3) With output overload protection

2. A/D Converter : 1x12-bit ADC

- (1) Input voltage range : 0 ~ +5V
- (2) Time pulse frequency : 3.58 MHz
- (3) Control signals : Status, pole, over range indication

3. Interface Port

USB interface : Type B

4. D/A Converter : 1 x 12-bit DAC

Analog output & control

- OUT+ : +DC OFFSET 0V ~ +4.096V unipolar
- OUT- : -DC OFFSET 0V ~ -4.096V unipolar
- OUT BP : DC OFFSET -2.048V ~ +2.048V bipolar

- 5. Preset Level : 4-digit thumbwheel switch, Max. value : 4095

6. Status Display & DCV

Input voltage measurement

- a. Range : 2000mV, 20V
- b. Accuracy : $\pm 0.05\%$ of reading + 4 counts
- c. Input impedance : 10M Ω
- d. Display : 4 1/2 digits

7. Mode Selector

Manual/single-chip

8. Buzzer

Maximum input signal voltage : +12V

9. Microcontroller Signals

5 Control line outputs

10. Model Holder : x4

11. Potentiometer : 100K Ω B-type

12. Comparator

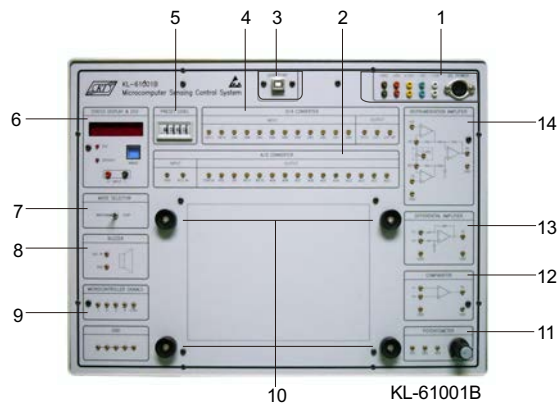
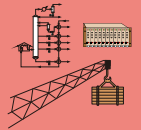
V-, V+ input, Vo output

13. Differential amplifier

V-, V+ input, Vo output

14. Instrumentation amplifier

V-, V+ input, Vo output, adjustable gain



Experiment Modules

1. Using 2mm plugs and sockets
2. Comprehensive experiment manual
3. Modules secured in plastic housings
4. Connected by 2mm-2mm test leads
5. Dimension : 255x165x30mm
6. Circuit symbols, blocks and components printed on the surface of each module
7. Power supplied from KL-61001B main unit

Graphic User Interface Software

System Requirements

1. Operating System : XP, Vista, or Windows 7
2. Computer Processor : Intel Pentium 4 or later
3. Computer Interface : USB
4. Computer Memory : 1 GB or more
5. HDD Space : 200MB of free space

Specification & Feature

1. Real time acquire signal
2. Adjustable acquire frequency
3. Current, Min and Max value displayed
4. Data save, load and print function
5. X-axis : TIME/DIV
Y-axis : VOLT/DIV
6. Storage format : Excel format



KL-64001



KL-64009



KL-64002



KL-64010



KL-64003



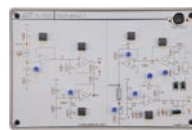
KL-64011



KL-64004



KL-64012



KL-64005



KL-64013



KL-64006



KL-64014



KL-64007



KL-64015



KL-64008



KL-64016

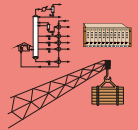
List of Modules

KL-64001

1. Phototransistor
2. Photointerrupter
3. Magnetic (hall-effect) ~ digital
4. Magnetic (hall-effect) ~ analog

KL-64002

1. Pyroelectric detector
2. Reed switch
3. Thermistor
4. Mercury switch



KL-64003

1. Limit switch
2. Vibration switch
3. Condenser microphone
4. Dynamic microphone

KL-64004

1. Gas/smoke sensor
2. Ethanol sensor

KL-64005

1. IC (AD590) temperature sensor
2. Humidity sensor
 - (1) Humidity transducer rated voltage : 1 Vp-p AC
 - (2) Frequency range : 100Hz ~ 10KHz
 - (3) Temperature range : 0°C ~ 60°C
 - (4) Humidity range : 20%RH ~ 90%RH
 - (5) Impedance : 13K Ω (70%RH at 25°C)

KL-64006

1. Infrared TX/RX sensor
 - (1) Infrared transmitter : Emission intensity : 12mW/sr
(If = 50mA)
Emission wavelength : 940nm
(If = 50mA)
 - (2) Infrared receiver : Sensitivity wavelength : 1000nm
2. Ultrasonic TX/RX sensor
 - Norminal frequency : 40KHz

KL-64007

1. Pressure sensor
 - 0-7 psi to 0-30 psi pressure ranges
2. Strain gauge
 - (1) Maximum payload : <5kg
 - (2) Terminal resistance : 350 $\pm$ 50 Ω

KL-64008

1. Hall current sensor
 - (1) Nominal current : $\pm$ 3A
 - (2) Current range : $\pm$ 9A
 - (3) Output voltage : $\pm$ 4V, RL = 10 k Ohms
2. Proximity sensor
 - (1) Operation voltages : 10 ~ 30V DC
 - (2) Short circuit protection

KL-64009

1. CDS sensor
2. Photovoltaic sensor
 - (1) Photovoltaic transducer open voltage $\approx$ 2V
 - (2) Photovoltaic transducer close current $\approx$ 0.06 μ A/lx

KL-64010

1. V/F converter
 - (1) Input voltage : +10mV ~ +10V
 - (2) Output frequency : 5Hz ~ 5KHz, 10Hz ~ 10KHz

KL-64011

1. F/V converter
 - (1) Input frequency : 0 ~ 4.3KHz ($\pm$ 0.2Vp ~ $\pm$ 5Vp)
 - (2) Output voltage : 0 ~ 4.3V DC

KL-64012

1. RTD (PT-100)
 - (1) 0°C : 100 Ω , 100°C : 139.16 Ω
 - (2) Rating : 250°C

KL-64013

1. Level (Water)
 - Simulation of the reservoir control status(motor included)

KL-64014

1. Fiber optic emitter
 - (1) Forward current, DC (If) : 50mA
 - (2) Peak wave length : 950nm
 - (3) Output power : 50 μ w
2. Fiber optic phototransistor
 - (1) λ peak : 850nm
 - (2) Collect current (Ic) : 50mA
 - (3) Power dissipation : 100mw

KL-64015

1. LVDT
 - (1) Range : $\pm$ 5mm
 - (2) Scale : 0.01mm
 - (3) Optimum frequency : 50Hz ~ 1.1KHz
(Nominal : 350Hz)

KL-64016

1. Rotation angle sensor
 - (1) 10 turns (3600°) precision potentiometer
 - (2) Linearity : $\pm$ 0.25%

► List of Experiments

KL-61001B

D/A and A/D Converters

KL-64001

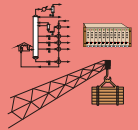
Photo Transistor/Interrupter & Hall Effect Sensor

- (1) Characteristics and applications of photoconductive detectors
- (2) Characteristics and applications of magnetic sensors
- (3) Principles and applications of magnetic hall sensors

KL-64002

Pyroelectric Detector & Reed Switch & Thermistor & Mercury Switch Sensor

- (1) Characteristics and applications of pyroelectric detector
- (2) Characteristics and applications of reed switch
- (3) Characteristics and applications of thermal sensors
- (4) Characteristics and applications of mercury switch

**KL-64003**

Limit Switch & Vibration Switch & Condenser/Dynamic Microphone Sensor

- (1) Characteristics and applications of limit switch
- (2) Characteristics and constructions of vibration switches
- (3) Characteristics and applications of microphones

KL-64004

Gas/Smoke & Ethanol Sensor

- (1) Principles and applications of gas/smoke sensors
- (2) Principles and applications of ethanol sensors

KL-64005

1. AD590 temperature sensor
 - (1) Characteristics and transduction circuit of the AD590
 - (2) Digital thermometer
2. Humidity sensor
 - (1) Basic measurement
 - (2) Impedance measurement
 - (3) Conversion voltage measurement

KL-64006

1. Infrared TX/RX sensor
 - (1) AC characteristics
 - (2) Event counter
2. Ultrasonic TX/RX sensor
 - (1) Space disturbance detector

KL-64007

1. Pressure sensor
2. Strain gauge

KL-64008

1. Hall current sensor
2. Proximity sensor

KL-64009

1. Photovoltaic sensor
2. CDS sensor
 - (1) CDS photoconductive cells characteristics
 - (2) Light controller

KL-64010

VFC converter

KL-64011

FVC converter

KL-64012

1. RTD(PT-100) sensor
 - (1) R vs. T characteristic of PT-100
 - (2) Transduction circuit
 - (3) Fire alarm

KL-64013

Liquid level control

KL-64014

Fiber optics communication

KL-64015

LVTB sensor

KL-64016

Rotation angle sensor

► Accessories (KL-68013)

1. Experimental manual
2. Connection leads and plugs : 1set